

[illegible]

Application Number: Not yet assigned

Filed: herewith

Title: Tumor Necrosis Factor-Gamma

**Statement Under 37 C.F.R. § 1.821(f)**

Sir:

Respectfully submitted

Date: July 6, 2001

Human Genome Sciences, Inc.  
9410 Key West Avenue  
Rockville, MD 20850  
(301) 610-5771 (telephone)

KKH/MS:cmp

$\langle 222 \rangle \quad (864) \dots (1304)$

<220>  
 <221> sig\_peptide  
 <222> (783)..(863)

<220>  
 <221> misc\_feature  
 <222> (2265)  
 <223> n equals a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (2273)  
 <223> n equals a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (2307)  
 <223> n equals a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (2336)  
 <223> n equals a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (2341)  
 <223> n equals a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (2379)  
 <223> n equals a, t, g, or c

<400> 1  
 cccaatcaag agaaattcca tactatcacc agttggccga ctttccaagt ctagtgcaga 60  
 aatccaaggc acctcacacc tagagttcct atacctctga gactccagag gaaagaacaa 120  
 gacagtgcag aaggatatgt tagaaccac tgaaaaccta gaaggttgaa aaggaagcat 180  
 accctcctga cctataagaa aattttcagt ctgcaggggg atatccttgt ggcccaagac 240  
 attggtgtta tcatttgact aagaggaaat tatttgtggt gagctctgag tgaggattag 300  
 gaccaggag atgccaagtt tctatcactt acctcatgcc tgtaagacaa gtgttttggt 360  
 ccaattgatg aatggggaga aaacagttca gccaatcact tatgggcaca gaatggaatt 420  
 tgaagggtct ggtgcctgcc ctgtcatcac gtaaacaaga gaggcacga tgagttttat 480  
 ctgagtcatt tgggaaagga taattcttgc accaagccat tttcctaaac acagaagaat 540  
 agggggattc cttaaccttc attgttctcc aggatcatag gtctcaggat aaattaaaaa 600  
 ttttcaggtc agaccactca gtctcagaaa ggcaaagtaa tttgccccag gtcactagtc 660  
 caagatgtta ttctctttga acaaattgtgt atgtccagtc acatattctt cattcattcc 720  
 tccccaaagc agtttttagc tgtaggtat attcgatcac ttagtctat tttgaaaatg 780  
 at atg aga cgc ttt tta agc aaa gtc tac agt ttc cca atg aga aaa 827  
 Met Arg Arg Phe Leu Ser Lys Val Tyr Ser Phe Pro Met Arg Lys  
 -25 -20 -15  
 tta atc ctc ttt ctt gtc ttt cca gtt gtg aga caa act ccc aca cag 875  
 Leu Ile Leu Phe Leu Val Phe Pro Val Val Arg Gln Thr Pro Thr Gln

	-10						-5					-1	1				
cac His 5	ttt Phe	aaa Lys	aat Asn	cag Gln	ttc Phe 10	cca Pro	gct Ala	ctg Leu	cac His	tgg Trp 15	gaa Glu	cat His	gaa Glu	cta Leu	ggc Gly 20	923	
ctg Leu	gcc Ala	ttc Phe	acc Thr	aag Lys 25	aac Asn	cga Arg	atg Met	aac Asn	tat Tyr 30	acc Thr	aac Asn	aaa Lys	ttc Phe	ctg Leu 35	ctg Leu	971	
atc Ile	cca Pro	gag Glu	tcg Ser 40	gga Gly	gac Asp	tac Tyr	ttc Phe	att Ile 45	tac Tyr	tcc Ser	cag Gln	gtc Val 50	aca Thr	ttc Phe	cgt Arg	1019	
ggg Gly	atg Met	acc Thr 55	tct Ser	gag Glu	tgc Cys	agt Ser	gaa Glu 60	atc Ile	aga Arg	caa Gln	gca Ala	ggc Gly 65	cga Arg	cca Pro	aac Asn	1067	
aag Lys	cca Pro 70	gac Asp	tcc Ser	atc Ile	act Thr	gtg Val 75	gtc Val	atc Ile	acc Thr	aag Lys	gta Val 80	aca Thr	gac Asp	agc Ser	tac Tyr	1115	
cct Pro 85	gag Glu	cca Pro	acc Thr	cag Gln	ctc Leu 90	ctc Leu	atg Met	ggg Gly	acc Thr	aag Lys 95	tct Ser	gta Val	tgc Cys	gaa Glu	gta Val 100	1163	
ggc Gly	agc Ser	aac Asn	tgg Trp	ttc Phe 105	cag Gln	ccc Pro	atc Ile	tac Tyr	ctc Leu 110	gga Gly	gcc Ala	atg Met	ttc Phe	tcc Ser 115	ttg Leu	1211	
caa Gln	gaa Glu	ggg Gly	gac Asp 120	aag Lys	cta Leu	atg Met	gtg Val	aac Asn 125	gtc Val	agt Ser	gac Asp	atc Ile	tct Ser 130	ttg Leu	gtg Val	1259	
gat Asp	tac Tyr	aca Thr 135	aaa Lys	gaa Glu	gat Asp	aaa Lys	acc Thr 140	ttc Phe	ttt Phe	gga Gly	gcc Ala	ttc Phe 145	tta Leu	cta Leu		1304	
taggaggaga	gcaaatatca				ttatatgaaa				gtcctctgcc				accgagttcc				1364
tgttcaaatz	taattataac				caggggtttt				cttgggggccg				ggagtagggg				1424
gggacaacgg	tttagctatz				aaatttgggg				ccaaaatttc				acacttcatg				1484
atgagagtac	taactggaaa				aaggctgaag				agagcaaata				tattattaag				1544
ggattggcga	gtttctaaat				attaagacac				tgatcactaa				atgaatggat				1604
ggtcaggatt	gaaagagaaa				tatitcaaca				cctccctgct				atacaatggc				1664
ccagttattg	ttcaatttga				tcataaatit				gcttcaattc				aggagctitt				1724
aaggaaaagct	ctagaaaaca				gtataaaact				tcagaggcaa				aatccttcac				1784
acatacttit	atgccttgcc				taaaaaaaat				gaaaagagag				ttggtatgtc				1844
tcacacagaa	ggagttgggt				ttcatgtcat				ctacagcata				tgagaaaagc				1904
ttgattatgt	acacagatat				ctaaataagg				aagtttgagt				ttcacatgta				1964
acaacagttg	cttgtattca				gtagagttit				cttgcccacc								

tcatactaagg ccgggaggttc aagaccagcc tgaccaacgt ggagaaaccc catctctact 2264  
naaaatacna aattagccgg gcgtggtagc gcatggctgt aancctggct actcaggagg 2324  
ccgaggcaga anaattncctt gaactgggga ggcagaggtt gcggtgagcc cagancgcgc 2384  
cattgcactc cagcctgggt aacaagagca aaactctgtc caaaaaaaaa aaaaaaaa 2442

<210> 2  
<211> 174  
<212> PRT  
<213> Homo sapiens

<400> 2  
Met Arg Arg Phe Leu Ser Lys Val Tyr Ser Phe Pro Met Arg Lys Leu  
-25 -20 -15  
Ile Leu Phe Leu Val Phe Pro Val Val Arg Gln Thr Pro Thr Gln His  
-10 -5 -1 1 5  
Phe Lys Asn Gln Phe Pro Ala Leu His Trp Glu His Glu Leu Gly Leu  
10 15 20  
Ala Phe Thr Lys Asn Arg Met Asn Tyr Thr Asn Lys Phe Leu Leu Ile  
25 30 35  
Pro Glu Ser Gly Asp Tyr Phe Ile Tyr Ser Gln Val Thr Phe Arg Gly  
40 45 50  
Met Thr Ser Glu Cys Ser Glu Ile Arg Gln Ala Gly Arg Pro Asn Lys  
55 60 65  
Pro Asp Ser Ile Thr Val Val Ile Thr Lys Val Thr Asp Ser Tyr Pro  
70 75 80 85  
Glu Pro Thr Gln Leu Leu Met Gly Thr Lys Ser Val Cys Glu Val Gly  
90 95 100  
Ser Asn Trp Phe Gln Pro Ile Tyr Leu Gly Ala Met Phe Ser Leu Gln  
105 110 115  
Glu Gly Asp Lys Leu Met Val Asn Val Ser Asp Ile Ser Leu Val Asp  
120 125 130  
Tyr Thr Lys Glu Asp Lys Thr Phe Phe Gly Ala Phe Leu Leu  
135 140 145

<210> 3  
<211> 233  
<212> PRT  
<213> Homo sapiens

<400> 3  
Met Ser Thr Glu Ser Met Ile Arg Asp Val Glu Leu Ala Glu Glu Ala  
1 5 10 15  
Leu Pro Lys Lys Thr Gly Gly Pro Gln Gly Ser Arg Arg Cys Leu Phe  
20 25 30  
Leu Ser Leu Phe Ser Phe Leu Ile Val Ala Gly Ala Thr Thr Leu Phe  
35 40 45  
Cys Leu Leu His Phe Gly Val Ile Gly Pro Gln Arg Glu Glu Ser Pro  
50 55 60  
Arg Asp Leu Ser Leu Ile Ser Pro Leu Ala Gln Ala Val Arg Ser Ser  
65 70 75 80

Ser	Arg	Thr	Pro	Ser	Asp	Lys	Pro	Val	Ala	His	Val	Val	Ala	Asn	Pro
				85					90					95	
Gln	Ala	Glu	Gly	Gln	Leu	Gln	Trp	Leu	Asn	Arg	Arg	Ala	Asn	Ala	Leu
			100					105					110		
Leu	Ala	Asn	Gly	Val	Glu	Leu	Arg	Asp	Asn	Gln	Leu	Val	Val	Pro	Ser
		115					120					125			
Glu	Gly	Leu	Tyr	Leu	Ile	Tyr	Ser	Gln	Val	Leu	Phe	Lys	Gly	Gln	Gly
	130					135					140				
Cys	Pro	Ser	Thr	His	Val	Leu	Leu	Thr	His	Thr	Ile	Ser	Arg	Ile	Ala
145					150					155					160
Val	Ser	Tyr	Gln	Thr	Lys	Val	Asn	Leu	Leu	Ser	Ala	Ile	Lys	Ser	Pro
				165					170					175	
Cys	Gln	Arg	Glu	Thr	Pro	Glu	Gly	Ala	Glu	Ala	Lys	Pro	Trp	Tyr	Glu
			180					185					190		
Pro	Ile	Tyr	Leu	Gly	Gly	Val	Phe	Gln	Leu	Glu	Lys	Gly	Asp	Arg	Leu
		195					200					205			
Ser	Ala	Glu	Ile	Asn	Arg	Pro	Asp	Tyr	Leu	Asp	Phe	Ala	Glu	Ser	Gly
	210					215					220				
Gln	Val	Tyr	Phe	Gly	Ile	Ile	Ala	Leu							
225					230										
<210>	4														
<211>	205														
<212>	PRT														
<213>	Homo sapiens														
<400>	4														
Met	Thr	Pro	Pro	Glu	Arg	Leu	Phe	Leu	Pro	Arg	Val	Cys	Gly	Thr	Thr
1				5					10					15	
Leu	His	Leu	Leu	Leu	Leu	Gly	Leu	Leu	Leu	Val	Leu	Leu	Pro	Gly	Ala
			20					25					30		
Gln	Gly	Leu	Pro	Gly	Val	Gly	Leu	Thr	Pro	Ser	Ala	Ala	Gln	Thr	Ala
		35				40						45			
Arg	Gln	His	Pro	Lys	Met	His	Leu	Ala	His	Ser	Thr	Leu	Lys	Pro	Ala
	50					55					60				
Ala	His	Leu	Ile	Gly	Asp	Pro	Ser	Lys	Gln	Asn	Ser	Leu	Leu	Trp	Arg
65					70					75					80
Ala	Asn	Thr	Asp	Arg	Ala	Phe	Leu	Gln	Asp	Gly	Phe	Ser	Leu	Ser	Asn
				85					90					95	
Asn	Ser	Leu	Leu	Val	Pro	Thr	Ser	Gly	Ile	Tyr	Phe	Val	Tyr	Ser	Gln
			100					105					110		
Val	Val	Phe	Ser	Gly	Lys	Ala	Tyr	Ser	Pro	Lys	Ala	Pro	Ser	Ser	Pro
		115					120					125			
Leu	Tyr	Leu	Ala	His	Glu	Val	Gln	Leu	Phe	Ser	Ser	Gln	Tyr	Pro	Phe
	130					135					140				
His	Val	Pro	Leu	Leu	Ser	Ser	Gln	Lys	Met	Val	Tyr	Pro	Gly	Leu	Gln
145					150					155					160
Glu	Pro	Trp	Leu	His	Ser</										

<400> 6  
Met Gln Gln Pro Val Asn Tyr Pro Cys Pro Gln Ile Tyr Trp Val Asp

									7							
1				5					10					15		
Ser	Ser	Ala	Thr	Ser	Pro	Trp	Ala	Pro	Pro	Gly	Ser	Val	Phe	Ser	Cys	
			20					25					30			
Pro	Ser	Ser	Gly	Pro	Arg	Gly	Pro	Gly	Gln	Arg	Arg	Pro	Pro	Pro	Pro	
		35					40					45				
Pro	Pro	Pro	Pro	Ser	Pro	Leu	Pro	Pro	Pro	Ser	Gln	Pro	Pro	Pro	Leu	
	50					55					60					
Pro	Pro	Leu	Ser	Pro	Leu	Lys	Lys	Lys	Asp	Asn	Ile	Glu	Leu	Trp	Leu	
65					70					75					80	
Pro	Val	Ile	Phe	Phe	Met	Val	Leu	Val	Ala	Leu	Val	Gly	Met	Gly	Leu	
				85					90					95		
Gly	Met	Tyr	Gln	Leu	Phe	His	Leu	Gln	Lys	Glu	Leu	Ala	Glu	Leu	Arg	
			100					105					110			
Glu	Phe	Thr	Asn	His	Ser	Leu	Arg	Val	Ser	Ser	Phe	Glu	Lys	Gln	Ile	
		115					120					125				
Ala	Asn	Pro	Ser	Thr	Pro	Ser	Glu	Thr	Lys	Lys	Pro	Arg	Ser	Val	Ala	
	130					135					140					
His	Leu	Thr	Gly	Asn	Pro	Arg	Ser	Arg	Ser	Ile	Pro	Leu	Glu	Trp	Glu	
145					150					155					160	
Asp	Thr	Tyr	Gly	Thr	Ala	Leu	Ile	Ser	Gly	Val	Lys	Tyr	Lys	Lys	Gly	
				165					170					175		
Gly	Leu	Val	Ile	Asn	Glu	Ala	Gly	Leu	Tyr	Phe	Val	Tyr	Ser	Lys	Val	
			180					185					190			
Tyr	Phe	Arg	Gly	Gln	Ser	Cys	Asn	Ser	Gln	Pro	Leu	Ser	His	Lys	Val	
		195					200					205				
Tyr	Met	Arg	Asn	Phe	Lys	Tyr	Pro	Gly	Asp	Leu	Val	Leu	Met	Glu	Glu	
	210					215					220					
Lys	Lys	Leu	Asn	Tyr	Cys	Thr	Thr	Gly	Gln	Ile	Trp	Ala	His	Ser	Ser	
225					230					235					240	
Tyr	Leu	Gly	Ala	Val	Phe	Asn	Leu	Thr	Val	Ala	Asp	His	Leu	Tyr	Val	
				245					250					255		
Asn	Ile	Ser	Gln	Leu	Ser	Leu	Ile	Asn	Phe	Glu	Glu	Ser	Lys	Thr	Phe	
			260					265					270			
Phe	Gly	Leu	Tyr	Lys	Leu											
		275														

<210> 7  
 <211> 235  
 <212> PRT  
 <213> Homo sapiens

<400>	7															
Met	Ser	Thr	Glu	Ser	Met	Ile	Arg	Asp	Val	Glu	Leu	Ala	Glu	Gly	Pro	
1				5					10					15		
Leu	Pro	Lys	Lys	Ala	Gly	Gly	Pro	Gln	Gly	Ser	Lys	Arg	Cys	Leu	Cys	
			20					25					30			
Leu	Ser	Leu	Phe	Ser	Phe	Leu	Leu	Val	Ala	Gly	Ala	Thr	Thr	Leu	Phe	
		35					40					45				



```
<210> 8
<211> 434
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (15)
<223> n equals to a, t, g, or c

<220>
<221> misc_feature
<222> (19)
<223> n equals to a, t, g, or c

<220>
<221> misc_feature
<222> (133)
<223> n equals to a, t, g, or c

<220>
<221> misc_feature
<222> (388)
<223> n equals to a, t, g, or c

<220>
<221> misc_feature
<222> (424)
<223> n equals to a, t, g, or c

<400> 8
```

tctacacaag gtacngacng ctaccctgag ccaacccagc tcctcatggg gaccaagtct 60  
 gtatgcgaag taggtagcaa ctgggtccag cccatctacc tcggagccat gttctccttg 120  
 caagaagggg acnagctaata ggtgaacgac agtgacatct ctttggtgga ttacacaaaa 180  
 gaagataaaa ctttcttttg agccttctta ctataggagg agagcaaata tcattatatg 240  
 aaagtcctct gccaccgagt tcctaatttt ctttggtcaa atgtaattat aaccaggggt 300  
 tttcttgggg ccgggagtag ggggcattcc cacagggaca acggtttagc tatgaaattt 360  
 gggggggcca aaatttcaca acttcatngt tgcccttact tgatgagaag tacttaactt 420  
 gganaaaaagg cttg 434

<210> 9  
 <211> 493  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (288)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (296)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (309)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (314)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (340)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (343)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (348)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (369)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (385)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature

CCDS: C96666.1

<222> (410)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (417)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (423)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (431)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (434)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (437)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (444)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (459)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (486)  
 <223> n equals to a, t, g, or c

<400> 9  
 aattcggcag agaaattcca tactatcacc agttggccaa ctttccaagt ctagtgcaga 60  
 aatccaaggc acctcacacc tagagttcct atacctctga gactccagag gaaagaacaa 120  
 gacagtgcag aaggatatgt tagaaccac tgaaaaccta gaagggttaa aaggaagcat 180  
 accctcctga cctataagaa aattttcagt ctgcaggggg atataccttgt ggccaagac 240  
 attggtgtta tcatttgact aagaggaaat tatttggtgt gagctccnag tgaggnttag 300  
 ggaccaggng gtgnccaagt ttctatcact tacctcatgn ctntaagnca agtgttttgt 360  
 tcccattgnt gatgggggtta aaacnttcag ccatcacttt tggggcaagn atggggnttt 420  
 gangggttgg ngcnggnctt gtentcgtaa acagggggnt tgggtgggttt ttctgggtcc 480  
 ttgggnagga ctt 493

<210> 10  
 <211> 380  
 <212> DNA  
 <213> Homo sapiens

<220>

```
<220>
<221> misc_feature
<222> (119)
<223> n equals to a, t, g, or c
```

<220>  
 <221> misc\_feature  
 <222> (303)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (311)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (387)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (409)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (425)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (427)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (453)  
 <223> n equals to a, t, g, or c

<400> 11  
 ggcacagcng gnagtagggg gcattccaca gggacaacgg tttagctatg aaatttgagg 60  
 cccaaaattt cacacttcat gtgccttact gatgagagta ctaactggaa aaaggctgna 120  
 agagagcaaa tatattatta agatggggtg gaggattggc gagtttctaa atattaagac 180  
 actggatcac tgaaatgaat ggatgatcta ctcggtcca ggattgaaag agaaatattt 240  
 caacaccttc ctgctataca atggtcacca gtggtccagt tattgttcca atttgatcc 300  
 atnaatttgc nttcaattcc aggagctttg gaaggaattc caaggaaagc tccaggaaaa 360  
 ccgtattaaa ctttccaggg gccaaantcc ttcaccaatt ttttccacna actttccagg 420  
 cctgncncaa aaaaatggaa agggagttgg tangtccc 458

<210> 12  
 <211> 388  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (11)..(12)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (46)  
 <223> n equals to a, t, g, or c

```
<400> 12
ctgcactggg nncatgaact aggcctggcc ttcaccaaga accgantgan ctataccaac 60
aaattcctgc tgatcccaga ntcgggagac tacttcattt actcccaggt cacattccgt 120
gggaatgaac ctctgaantg ccagtgaaaa tcagncaagc aggccgacca aacaagccag 180
antccatnca ctgtgggtcat caccaaggta acagacagct accctgagcc aaccagctc 240
```

cttcatgggg accaagtttg ttgccaant aggttagcaa ctgggtccag cccattttac 300  
 cttggggggcc agttctnctt gncaagaagg ggacaagctt atgggtggaac gttcatanca 360  
 tcnttttttg gtggnntttac acaaaagg 388

<210> 13  
 <211> 37  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> TNF-gamma 5' primer with BamHI restriction site

<400> 13  
 gcgcgcatcc accatgagac gctttttaag caaagtc 37

<210> 14  
 <211> 36  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> TNF-gamma 3' primer with XbaI restriction site

<400> 14  
 cgcgtctaga ctatagtaag aaggctccaa agaagg 36

<210> 15  
 <211> 37  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> TNF-gamma 5' primer with BamHI restriction site

<400> 15  
 gcgcgcatcc accatgagac gctttttaag caaagtc 37

<210> 16  
 <211> 36  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> TNF-gamma 3' primer with XbaI restriction site

<400> 16  
 cgcgtctaga ctatagtaag aaggctccaa agaagg 36

<210> 17  
 <211> 56  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> TNF-gamma 3' primer containing sequences complementary to  
 Xba I site, translation stop codon, and HA tag

<400> 17  
 cgctctagat caagcgtagt ctgggacgtc gtaggatag taagaaggct ccaaag 56

<210> 18  
 <211> 733  
 <212> DNA  
 <213> Homo sapiens

```
<210> 19
<211> 1116
<212> DNA
<213> Homo sapiens
```

<400> 19						
atggcccgagg	atctgggact	gagctttggg	gaaacagcca	gtgtggaaat	gctgccagag	60
cacggcagct	gcaggcccaa	ggccaggagc	agcagcgcac	gctgggctct	cacctgctgc	120
ctggtgttgc	tccccttctt	tgcaggactc	accacatacc	tgcttgtcag	ccagctccgg	180
gcccagggag	aggcctgtgt	gcagttccag	gctctaaaag	gacaggagtt	tgcaccttca	240
catcagcaag	tttatgcacc	tcttagagca	gacggagata	agccaagggc	acacctgaca	300
gttgtgagac	aaactcccac	acagcacttt	aaaaatcagt	tcccagctct	gcactgggaa	360
catgaactag	gcctggcctt	caccaagaac	cgaatgaact	ataccaacaa	attcctgctg	420
atcccagagt	cgggagacta	cttcatttac	tcccagggtc	cattccgtgg	gatgacctct	480
gagtgcagtg	aatcagaca	agcaggccga	ccaacaagc	cagactccat	cactgtggtc	540
atcaccaagg	taacagacag	ctaccctgag	ccaaccagc	tcctcatggg	gaccaagtct	600
gtatgcgaag	taggtagcaa	ctggttccag	cccatctacc	tcggagccat	gttctccttg	660
caagaagggg	acaagcta	ggtgaacg	agtgacatct	ctttggtgga	ttacacaaaa	720
gaagataaaa	ccttcttttg	agccttctta	ctataggagg	agagcaaata	tcattatatg	780
aaagtccctct	gccaccgagt	tcctaatttt	ctttgttcaa	atgtaattat	aaccaggggt	840
tttcttgggg	ccgggagtag	gggcattcca	cagggacaac	ggtttagcta	tgaaatttgg	900
ggcccaaaat	ttcacacttc	atgtgcctta	ctgatgagag	tactaactgg	aaaaaggctg	960
aagagagcaa	atatattatt	aagatggggt	ggaggattgg	cgagtttcta	aatattaaga	1020
cactgatcac	taaatgaatg	gatgatctac	tcgggtcagg	attgaaagag	aaatatattca	1080



1116

<400> 20

Met Leu Pro Glu His Gly Ser Cys Arg Pro Lys Ala Arg Ser Ser Ser  
20 25 30

Gly Leu Thr Thr Tyr Leu Leu Val Ser Gln Leu Arg Ala Gln Gly Glu  
50 55 60

Ala Cys Val Gln Phe Gln Ala Leu Lys Gly Gln Glu Phe Ala Pro Ser  
65 70 75 80

His Gln Gln Val Tyr Ala Pro Leu Arg Ala Asp Gly Asp Lys Pro Arg  
85 90 95

Ala His Leu Thr Val Val Arg Gln Thr Pro Thr Gln His Phe Lys Asn  
100 105 110

Gln Phe Pro Ala Leu His Trp Glu His Glu Leu Gly Leu Ala Phe Thr  
115 120 125

Lys Asn Arg Met Asn Tyr Thr Asn Lys Phe Leu Leu Ile Pro Glu Ser  
130 135 140

Gly Asp Tyr Phe Ile Tyr Ser Gln Val Thr Phe Arg Gly Met Thr Ser  
145 150 155 160

Glu Cys Ser Glu Ile Arg Gln Ala Gly Arg Pro Asn Lys Pro Asp Ser  
165 170 175

Ile Thr Val Val Ile Thr Lys Val Thr Asp Ser Tyr Pro Glu Pro Thr  
180 185 190

Gln Leu Leu Met Gly Thr Lys Ser Val Cys Glu Val Gly Ser Asn Trp  
195 200 205

Phe Gln Pro Ile Tyr Leu Gly Ala Met Phe Ser Leu Gln Glu Gly Asp  
210 215 220

Lys Leu Met Val Asn Val Ser Asp Ile Ser Leu Val Asp Tyr Thr Lys  
225 230 235 240

Glu Asp Lys Thr Phe Phe Gly Ala Phe Leu Leu  
245 250

 $\langle 220 \rangle$ 

```
<221> misc_feature
```

<222> (15)

<223> n equals to a, t, g, or c

 $\langle 220 \rangle$

<221> misc\_feature  
 <222> (19)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (133)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (388)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (424)  
 <223> n equals to a, t, g, or c

<400> 21  
 tctacacaag gtacngacng ctaccctgag ccaacccagc tcctcatggg gaccaagtct 60  
 gtatgcgaag taggtagcaa ctgggtccag cccatctacc tcggagccat gttctccttg 120  
 caagaagggg acnagctaata ggtgaacgac agtgacatct ctttggtgga ttacacaaaa 180  
 gaagataaaa ctttcttttg agccttctta ctataggagg agagcaaata tcattatatg 240  
 aaagtccctt gccaccgagt tcttaatttt ctttggtcaa atgtaattat aaccaggggt 300  
 tttcttgggg ccgggagtag ggggcatcc cacagggaca acggttttagc tatgaaattt 360  
 ggggggcca aaatttcaca acttcatngt tgcccttact tgatgagaag tacttaactt 420  
 gganaaaagg cttg 434

<210> 22  
 <211> 417  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (4)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (8)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (17)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (24)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (28)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature

109020-530660

<222> (31)..(32)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (35)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (41)..(43)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (46)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (48)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (50)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (53)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (55)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (61)..(63)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (66)..(67)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (202)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (209)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (282)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (306)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (321)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (344)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (346)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (380)..(381)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (395)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (405)  
 <223> n equals to a, t, g, or c

<400> 22  
 attncggnac gagcagnggc atgnccgngg nnctnggact nnnctntngn gananagcca 60  
 nnnttnnaat gctgccagag cacggcagct gcaggcccaa ggccaggagc agcagcgcac 120  
 gctgggctct cacctgctgc ctgggtgttg tccccttct tgcaggactc accacatacc 180  
 tgcttgctcag ccagcttcgg gnccagggng aggcctgtgt gcagttccag ggtctaaaag 240  
 gacaggagtt tgcaccttca catcagcaag tttatgcacc tnntagagca gacggagata 300  
 agccangggg acaactgaca nttgtgagac aaattccaca cagnanttta aaatcagttt 360  
 ccagttttga atggggacan nattaggctg gcttnacaag accgntggat tttacag 417

<210> 23  
 <211> 388  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (11)..(12)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (46)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (50)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (81)

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (138)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (155)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (182)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (188)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (269)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (317)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (322)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (358)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (363)

<223> n equals to a, t, g, or c

<220>

<221> misc\_feature

<222> (375)

<223> n equals to a, t, g, or c

<400> 23

ctgcactggg nncatgaact aggcctggcc ttcaccaaga accgantgan ctataccaac 60

aaattcctgc tgatcccaga ntcgggagac tactttcattt actcccaggt cacattccgt 120

gggaatgaac ctctgaantg ccagtgaaaa tcagncaagc aggccgacca aacaagccag 180

antccatnca ctgtgggtcat caccaaggta acagacagct accctgagcc aaccagctc 240

cttcatgggg accaagtttg tttgcgaant aggttagcaa ctggttccag cccattttac 300

cttggggggc agttctnctt gncaagaagg ggacaagctt atggtggaac gttcatanca 360

tcnttttttg gtggnntttac acaaaaagg 388

<210> 24

<211> 458  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (9)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (12)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (119)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (303)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (311)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (387)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (409)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (425)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (427)  
 <223> n equals to a, t, g, or c

<220>  
 <221> misc\_feature  
 <222> (453)  
 <223> n equals to a, t, g, or c

<400> 24  
 ggcacagcng gnagtagggg gcattccaca gggacaacgg tttagctatg aaatttgggg 60  
 cccaaaattt cacacttcat gtgccttact gatgagagta ctaactggaa aaaggctgna 120  
 agagagcaaa tatattatta agatggggttg gaggattggc gagtttctaa atattaagac 180  
 actggatcac tgaaatgaat ggatgatcta ctcggttcca ggattgaaag agaaatattt 240  
 caacaccttc ctgctataca atgggtcacca gtggtccagt tattgttcca atttggatcc 300  
 atnaatttgc nttcaattcc aggagctttg gaaggaattc caaggaaagc tccaggaaaa 360  
 ccgtattaaa ctttccaggg gccaaantcc ttcaccaatt ttttccacna actttccagg 420

cctgncncaa aaaaatggaa agggagttgg tangtccc

458

<210> 25

<211> 546

<212> DNA

<213> Artificial Sequence

<220>

<223> codon optimized form of TNF-gamma-beta

<400> 25

atgctgaaag gtcaagaatt cgcaccgtcc caccagcagg tttacgcacc gctgcgtgca 60  
gacggtgata agccgcgtgc acacctgacc gttgtgcgcc agaccccgac ccagcacttc 120  
aaaaaccagt tcccggctct gcaactggag cacgaactgg gcctggcctt caccaagaac 180  
cgcatgaact acaccaacaa attcctgctg atcccggagt ctggtgacta cttcatctac 240  
tcccaggtga ctttccgtgg tatgacctct gagtgctccg aaatccgtca ggcaggccgt 300  
ccgaacaagc cggactccat caccgtggtg atcaccaaag tgaccgactc ttacccgag 360  
ccgaccagc tgctgatggg taccaagtct gtttgccaag ttggttccaa ctggttccag 420  
ccgatctacc tcggtgccat gttctccctg caagagggcg acaaactgat ggtgaacgtg 480  
tccgacatct ctctggtgga ttacaccaag gaagataaaa ctttcttcgg tgccttcctg 540  
ctgtaa 546

<210> 26

<211> 181

<212> PRT

<213> Artificial Sequence

<220>

<223> translation product of codon optimized form of  
TNF-gamma-beta

<400> 26

Met	Leu	Lys	Gly	Gln	Glu	Phe	Ala	Pro	Ser	His	Gln	Gln	Val	Tyr	Ala
1				5					10					15	
Pro	Leu	Arg	Ala	Asp	Gly	Asp	Lys	Pro	Arg	Ala	His	Leu	Thr	Val	Val
			20					25					30		
Arg	Gln	Thr	Pro	Thr	Gln	His	Phe	Lys	Asn	Gln	Phe	Pro	Ala	Leu	His
		35				40						45			
Trp	Glu	His	Glu	Leu	Gly	Leu	Ala	Phe	Thr	Lys	Asn	Arg	Met	Asn	Tyr
	50				55						60				
Thr	Asn	Lys	Phe	Leu	Leu	Ile	Pro	Glu	Ser	Gly	Asp	Tyr	Phe	Ile	Tyr
	65				70					75				80	
Ser	Gln	Val	Thr	Phe	Arg	Gly	Met	Thr	Ser	Glu	Cys	Ser	Glu	Ile	Arg
				85				90						95	
Gln	Ala	Gly	Arg	Pro	Asn	Lys	Pro	Asp	Ser	Ile	Thr	Val	Val	Ile	Thr
			100					105					110		
Lys	Val	Thr	Asp	Ser	Tyr	Pro	Glu	Pro	Thr	Gln	Leu	Leu	Met	Gly	Thr
		115					120					125			
Lys	Ser	Val	Cys	Glu	Val	Gly	Ser	Asn	Trp	Phe	Gln	Pro	Ile	Tyr	Leu
	130					135					140				

$\langle 210 \rangle$	30
$\langle 211 \rangle$	135



<213> Artificial Sequence

<223> 3' primer to useful for generating 3' half of codon optimized form of TNF-gamma-beta

cgctctagat tattacagca ggaaggcacc gaagaagggtt ttatcttcct tgggtgtaatc 60

caccagagag atgtcggaca cgttcaccat cagtttgtcg ccctcttgca gggagaacat 120

ggcaccgagg tagat

135